

3. Roll each ring around its piston groove as shown in **Figure 95** to check for binding. Minor binding may be cleaned up with a fine-cut file.
4. Measure the side clearance of each ring in its groove with a flat feeler gauge (**Figure 96**) and compare to dimensions given in **Table 1**. If the clearance is greater than specified, the rings must be replaced. If the clearance is still excessive with the new rings, the piston must also be replaced.
5. Measure each ring for wear. Place each ring, one at a time, into the cylinder and push it in about 20 mm (3/4 in.) with the crown of the piston to ensure that the ring is square in the cylinder bore. Measure the gap with a flat feeler gauge (**Figure 97**) and compare to dimensions in **Table 1**. If the gap is greater than specified, the rings should be replaced. When installing new rings, measure their end gap in the same manner as for old ones. If the gap is less than specified, carefully file the ends (**Figure 98**) with a fine-cut file until the gap is correct.
6. Install the piston rings in the order shown in **Figure 99**.

#### NOTE

*Install all rings with their markings facing up.*

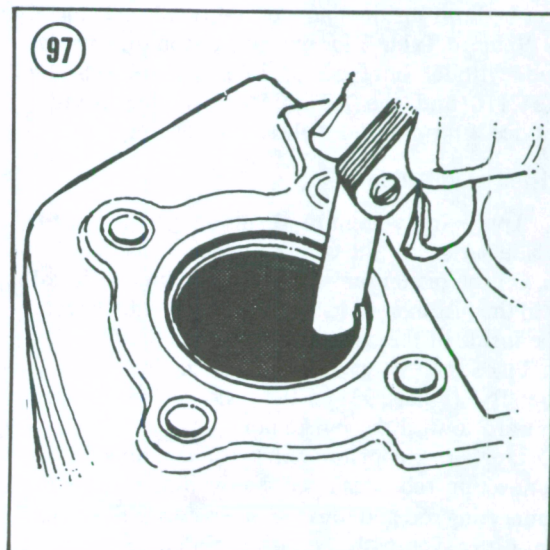
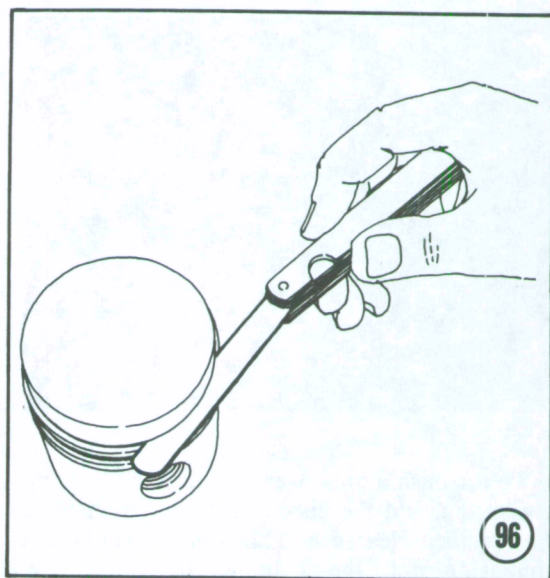
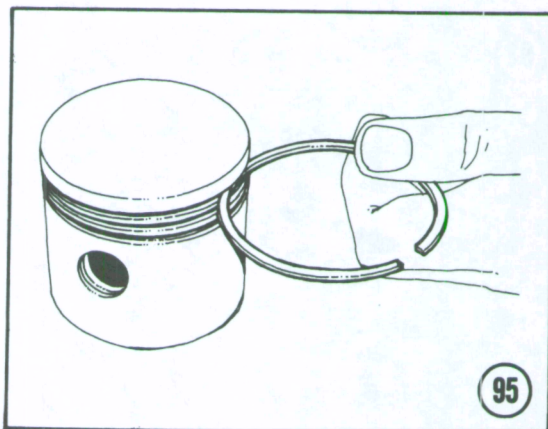
7. Install the piston rings—first the bottom one, then the middle one, then the top—by carefully spreading the ends of the ring with your thumbs and slipping the ring over the top of the piston. Remember that the marks on the piston rings are toward the top of the piston.
8. Make sure the rings are seated completely in their grooves all the way around the piston and that the ends are distributed around the piston as shown in **Figure 100**. The important thing is that the ring gaps are not aligned with each other when installed.
9. If new rings were installed, measure the side clearance of each ring in its groove with a flat feeler gauge (**Figure 96**) and compare to dimensions given in **Table 1**.
10. Follow the *Break-in Procedure* in this chapter if a new piston or piston rings have been installed or the cylinder was rebored or honed.

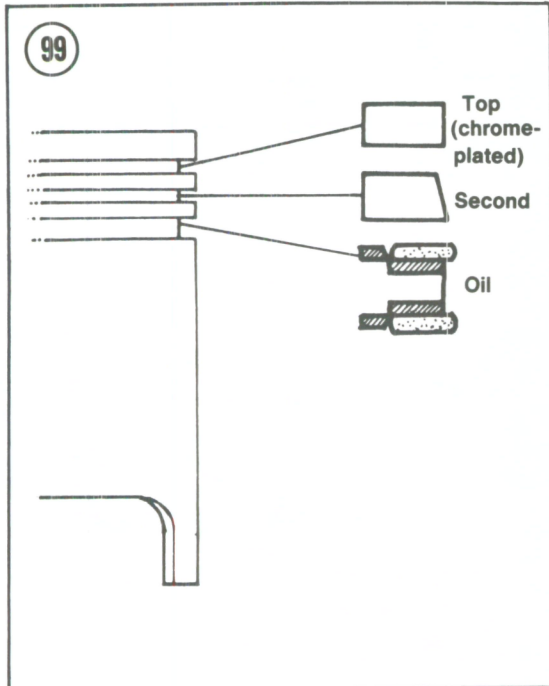
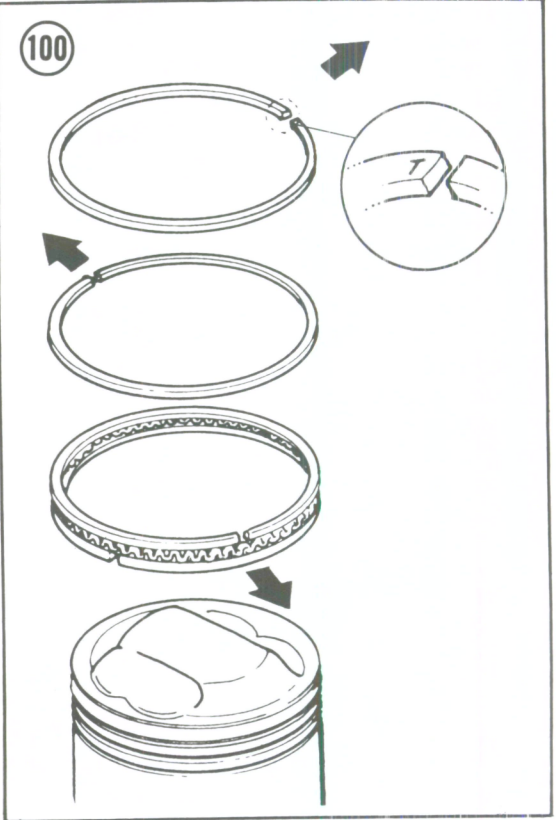
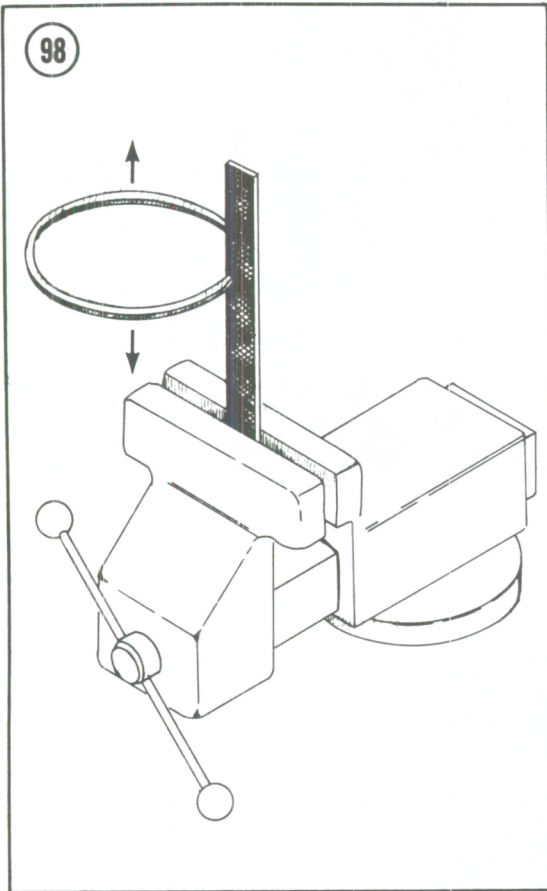
### OIL PUMP

The oil pump is located on the right-hand side of the engine forward of the clutch assembly. The oil pump can be removed with the engine in the frame.

#### Removal/Installation

1. Drain the engine oil as described in Chapter Three.





2. Remove the clutch assembly as described in Chapter Five.

3A. On 70 cc engines, remove the Phillips head screws (Figure 101) securing the oil pump and remove the oil pump assembly.

3B. On 90-125 cc engines, remove the bolt (A, Figure 102) and Phillips head screws (B, Figure 102) securing the oil pump and remove the oil pump assembly.

4. Install by reversing these removal steps, noting the following.

5. Make sure the gasket is located on the backside of the oil pump body prior to installation.

6. Align the tab on the oil pump rotor shaft with the notch in the cam chain guide sprocket shaft (Figure 103) and push the oil pump assembly into place. Tighten the fasteners securely.

7. Refill the crankcase with the recommended type and quantity of engine oil; refer to Chapter Three.

#### Disassembly/Inspection/Assembly

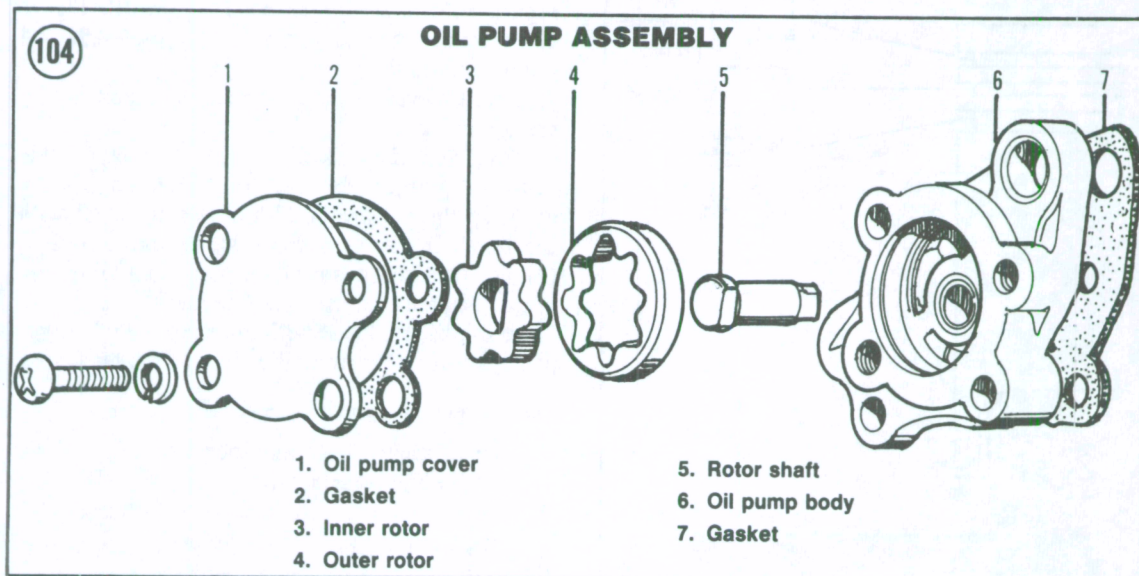
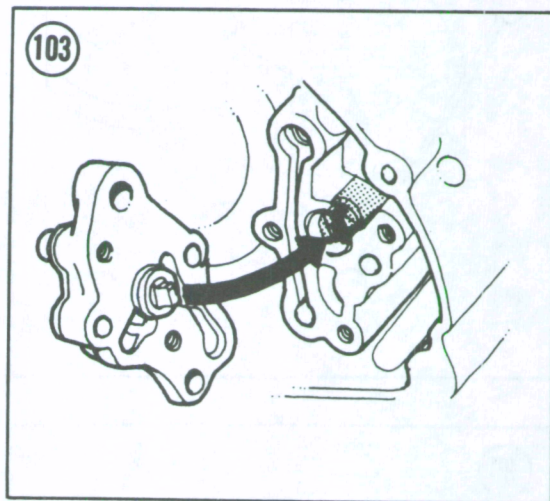
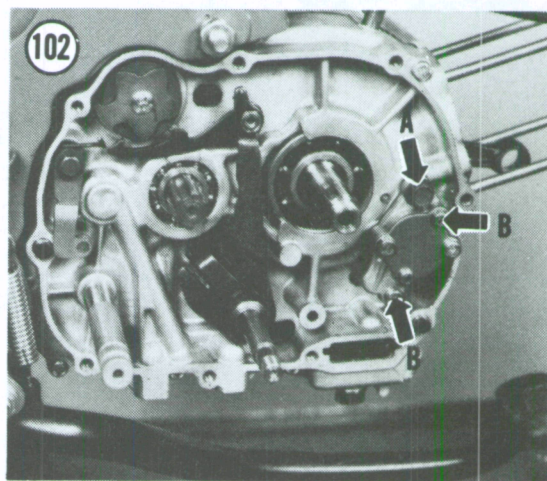
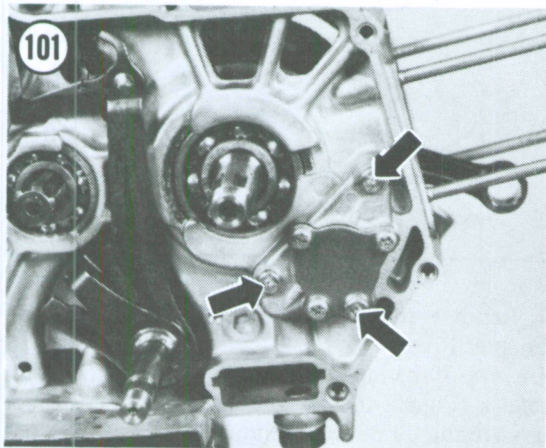
Refer to Figure 104 this procedure.

1. Remove the rotor shaft.

2. Remove the Phillips screws (Figure 105) securing the pump cover to the body and remove the cover.

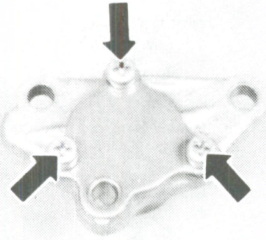


3. Remove the inner and outer rotors. Inspect both parts for scratches and abrasions. Replace both parts if evidence of this is found.
4. If damaged, remove the gasket.
5. Clean all parts in solvent and thoroughly dry. Coat all parts with fresh engine oil prior to assembly.
6. Inspect the pump body for cracks (**Figure 106**).
7. Install the inner and outer rotor into the pump body.
8. Measure the clearance between the inner rotor tip and the outer rotor as shown in **Figure 107**. If the clearance is 0.2 mm (0.008 in.) or greater, replace the worn part.
9. Measure the clearance between the outer rotor and the oil pump body with a flat feeler gauge (**Figure 108**). If the clearance is 0.20 mm (0.008 in.) or greater, replace the worn part.

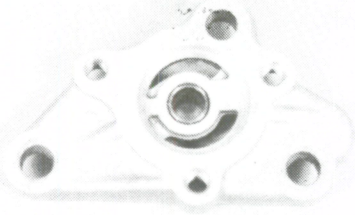




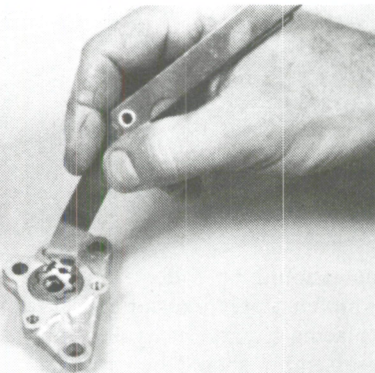
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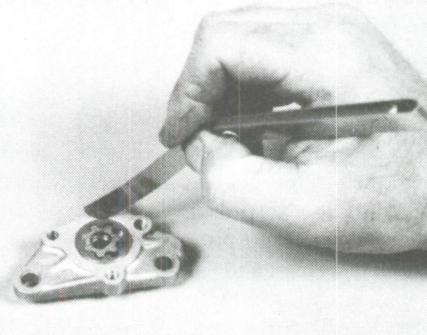
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108



10. Install the rotor shaft. Align the flat of the shaft with the flat of the inner rotor (Figure 109).

11. Install a new gasket (Figure 110).

12. Install the cover and screws and tighten the screws securely.

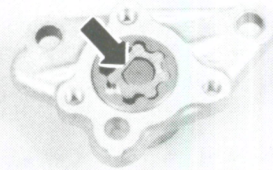
### LEFT-HAND CRANKCASE COVER (ATC90 AND ATC110)

This cover is not used on the ATC70 because that model is not equipped with a subtransmission. For ATC125M models, refer to *Electric Starter Gears and Left-Hand Crankcase Cover Spacer Removal/Installation* in this chapter.

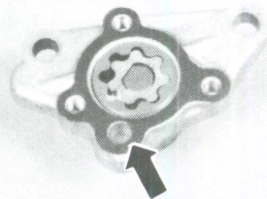
#### Removal/Installation

1. Drain the engine oil as described in Chapter Three.
2. Remove the subtransmission as described in Chapter Five.
3. Remove the recoil starter and the alternator as described in Chapter Seven.

109



110



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